California Monthly Climate Summary
October 2009

Weather Highlights

October 2009 started water year 2010 with a big storm that led to a cool wet month. According to the Western Region Climate Center's California Climate Tracker, the monthly average temperature was 56.4°F which is 1.9°F lower than the long-term average of 58.3°F. With a statewide average of 2.27 inches, precipitation for October was 186% of the long term average.

October started mild with a high pressure system sitting over the state. However, by the end of the first week, the first storm system of the water year pushed its way across the state dropping rain and snow. The highest totals were recorded on the west slope of the Sierra Nevada Mountains and the North Coast. As a weak high pressure system moved in behind this storm dry, northerly wind picked up in the north and central regions of the state. These winds brought cold air from Canada to the state resulting in frost and freeze events in some parts of the state. Later in the week Santa Ana winds picked up in the southern part of the state. The month's largest storm hit the state on October 13th. Remnants of Super-Typhoon Melor were incorporated into a mid-latitude trough bringing heavy rains and high winds to many parts of the state. Some places on the Central Coast of California picked up more than 10 inches of rain in 24 hours. Sharp rises were seen in many of the State's rivers and some rock and mudslides were reported. This storm was the strongest October storm since the Columbus Day storm of 1962. Following this storm, a surface high pressure system set into the region leading to warm dry weather for the state. Record high temperatures were set in Southern California with some places seeing temperatures almost 25 degrees warmer than normal. The month closed out with more warm, dry weather and windy conditions in some places.

Preliminary records, reported on the National Weather Service Record Event Report, shows that statewide there were 80 temperature records tied or broken and 33 precipitation records tied or broken for the month. Of the 80 temperature records, 39 were for new low minimum temperatures. Records were set over 13 days of the month. The strong storm of October 13th set many new records. Sacramento recorded a new low pressure for the month of October with a reading of 29.39 inches. The previous record of 29.42 inches was set on October 24, 1951. Bishop set a new one-day record for precipitation for the month of October with 1.58 inches. The previous record was 1.29 inches set back in 1945 on the 6th of October. All of this precipitation led to the second wettest month for Bishop with a total of 1.77 inches. The only wetter October was in 1945 when 2.93 inches fell. Eureka set a new daily record of precipitation on the 13th with 1.09 inches passing the 1.03 inches set back in 1908. Eureka tied another long-standing daily record on the 4th of October with a low temperature reading of 41°F last set in 1916. Cold weather also made it to southern California at the beginning of the month. On October 6th Lancaster recorded a low temperature of 32°F breaking the old record of 34°F set in 1969. Things changed by

the middle of the month when Camarillo and the WFO in Oxnard reached 100°F on the 16th of the month.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 140 stations recorded a minimum temperature below freezing in October while only 7stations reached or exceeded 100°F at least once during the month. Statewide extremes from the CDEC network of temperature gages are shown below. Also shown are the monthly average extremes from the CIMIS network. A table of regional average minimum, mean, and maximum temperatures from the CDEC and CIMIS networks is also shown at the end of the summary.

Precipitation in October was above normal for almost all regions of the state. For the CDEC precipitation gages for October 2009, the largest amount of precipitation recorded was Lagunitas Lake in Marin County with 9.63 inches. This is 316% of the average precipitation for this station for October. At the other end of the spectrum, 14 stations recorded no precipitation for the month. For the CIMIS network, Pajaro in Monterey County topped the precipitation charts with 6.13 inches for the month and 24 stations recorded no precipitation. Some CIMIS gages may show large precipitation totals if the gages are not covered during irrigation activities so care should be given to review precipitation data used from this network. The 8-Station Index for northern California precipitation recorded 4.7 inches in October with 10 days showing precipitation. On average, 3 inches of precipitation is recorded for the 8-Station index in October. Statewide, the average precipitation for October was 189% of the long-term average based on the California Data Exchange Center (CDEC) gages. Precipitation percentages by region from the CDEC gages are shown in a table at the end of this document.

CoCoRaHS Update

October 2009 celebrates California's first anniversary with CoCoRaHS – the Community Collaborative Rain, Hail and Snow Network. This group uses citizen volunteers to record rain, hail and snow data. The users enter the data online at the CoCoRaHS web site. The web site provides the opportunity to see spatial detail of rain and snow patterns in participating states. After one year in the program California has more than 550 volunteers signed up spanning 50 of California's 58 counties. The county with the most volunteers at the end of October is Sonoma with more than 80 volunteers. For the month of October 7,661 reports were recorded for California. The largest daily rain total for CoCoRaHS- CA in October was in Santa Clara County with 11.09 inches recorded on 10/14/09. No hail reports were submitted in October, but nine snow reports were included with the precipitation reports. To join CoCoRaHS or find more information, please visit http://www.cocorahs.org.

Snowpack and Water Supply Conditions

Water year 2010 starts a new year for the water supply index categories. Water year 2009 resulted in a dry category for the Sacramento Basin and below normal for the San Joaquin Basin. Water supply information for California can be found at

http://cdec.water.ca.gov/water_supply.html. A historical listing of water year categories for both basins can be found at http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST.

Drought Monitor and Seasonal Outlook

October's big storm led to improvements in the depiction of California's drought in the Drought Monitor. The maps for California for September 29, 2009 and October 27, 2009 are shown below. The Drought Monitor maps can be found on the National Drought Mitigation Center's (NDMC) website http://drought.unl.edu/dm/. These maps are largely a reflection of precipitation and soil moisture deficit estimates. As of the October 27th depiction, the entire state of California is depicted in either D0 (abnormally dry), D1 (moderate drought) conditions, or D2 (severe drought) conditions. The D2 category decreased from 45.8% of the map area for California to 17.7%. Drought free area in California increased from 0% to 9.1%. Maps are updated weekly.

The U.S. Seasonal Drought Outlook for November through January from NOAA depicts California with improving conditions across the state based on climatology and an expectation for a wetter than average winter largely due to the evolving El Niño conditions in the tropical Pacific. Updates are provided twice per month. Maps and information can be found at http://www.cpc.noaa.gov/products/expert_assessment/seasonal_drought.html.

The California Nevada River Forecast Center has begun producing some drought monitoring tools for California. These tools look at the frequency associated with precipitation deficits for the Northern California Eight Station Index and the San Joaquin Five Station Index. Another tool looks at the frequency of end-of-month storage for select reservoirs in California. The frequencies of the observations are related to the Drought Monitor's drought categories D0 through D4. These tools can be found at http://www.cnrfc.noaa.gov/climate.php. For October, the Eight Station Index is in drought free conditions for a 12-month period and D0 for the 24 month period. The Five Station Index is drought free for both periods. For the reservoirs for end-of-October storage, Trinity and Oroville reservoir are at a D2 level while Shasta, Berryessa, Folsom, Lake Tahoe, San Luis, Nacimiento/SanAntonio, and Casitas are at a D1 level. Lake Isabella is at a D0 level and all other reservoirs on the graphic are considered to be drought-free.

ENSO Conditions and Long-Range Outlooks

The El Niño/Southern Oscillation (ENSO) is being classified as an El Niño pattern. Equatorial sea surface temperature anomalies for the tropical Pacific for October have been positive with values of 1.5°C in the Niño 3.4. The August through October 3-month running mean of the Ocean Niño Index (ONI) is 0.9 which is the fourth ONI value above the threshold to qualify for an El Niño event. For conditions to be classified as an El Nino event, five consecutive ONI values need to be above the threshold value of 0.5. Most forecast models have the tropical sea surface

temperatures remaining in El Niño conditions through the early part of 2010. More information can be found at the Climate Prediction Center's web site: http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ Updates are posted weekly. The latest three month outlook (October through December) from NOAA indicates equal chances for above or below normal temperatures for the entire state of California. For precipitation, the entire state is forecast to have above normal conditions. Outlook plots and discussions can be fount at http://www.wrcc.dri.edu/longrang/. General weather information of interest can be found at http://www.noaawatch.gov/. For anomaly information please see http://www.wrcc.dri.edu/anom/cal_anom.html.

Agricultural Data

Harvest continued or neared completion for many crops in October for California. Rice, alfalfa, Sudan hay, sunflower, bean, and safflower harvest all continued. The fall sugar beet harvest began to wind down. In addition, grapes, apples, figs, peaches, plums, and nectarines were being harvested and neared completion for some. Pomegranate and olive harvests moved into full swing during the month. Nut harvests continued and were near complete by the end of the month. Vegetable harvests continued with some fall plantings started. Cattle continued to need supplemental feeding as pasture conditions remained in poor to very poor condition. Fall beef calving was slowed. The cooler weather was positive for poultry and milk production. For further crop information see http://www.nass.usda.gov/index.asp.

Other Climate Summaries

California Climate Tracker (new product of Western Region Climate Center)
Golden Gate Weather Service Climate Summary
NOAA Monthly State of the Climate Report

Statewide Extremes (CDEC)

High Temperature – 108°F (Buttercup, Colorado River Desert)
Low Temperature – 1°F (Bishop Pass, Tulare)
High Precipitation – 9.63 inches (Lagunitas Lake, San Francisco Bay)
Low Precipitation – 0 inches (14 Stations)

Statewide Extremes (CIMIS)

High Average Maximum Temperature – 89.2^0F (Salton Sea East, Imperial County)
Low Average Minimum Temperature – 27.3^0F (Alturas, Modoc County)
High Precipitation – 6.13 inches (Pajaro, Monterey County)*
Low Precipitation – 0 inches (24 stations)
*Sometimes irrigation water from sprinklers gets counted as precipitation if the gage is not covered.

Statewide Precipitation Statistics

Hydrologic Region	Region Weight	Basin Reporting			Stations Reporting			% of Historic Average	
		Basins	**Oct**	**Oct**	**Stations**	**Oct**	**Oct**	**Oct**	**Oct**
North Coast	0.27	5	4	4	17	8	8	91.5%	92%
SF Bay	0.03	3	3	3	6	4	4	318.8%	319%
Central Coast	0.06	5	4	4	10	5	5	555.7%	556%
South Coast	0.06	5	5	5	15	11	11	319.8%	320%
Sacramento River	0.26	10	10	10	43	30	30	144.5%	145%
San Joaquin River	0.12	8	7	7	27	22	22	245.4%	245%
Tulare Lake	0.07	5	5	5	27	26	26	256.0%	256%
North Lahontan	0.04	6	5	5	14	6	6	159.7%	160%
South Lahontan	0.06	5	5	5	14	9	9	178.1%	178%
Colorado River	0.03	2	2	2	6	4	4	0%	0%
Statewide Weighted Average	1	54	50	50	179	125	125	188.8%	189%

Statewide Mean Temperature Data by Hydrologic Region (degrees F)

Hydrologic Region	No. Stations	Minimum	Average	Maximum
North Coast	30	32.9	52.3	76.2
SF Bay	17	44.2	58.9	75.9
Central Coast	37	44.4	59.4	78.8
South Coast	60	43.3	62.7	89.0
Sacramento	90	32.5	53.4	77.6
San Joaquin	76	33.8	53.6	75.5
Tulare Lake	17	20.6	46.6	73.3
North Lahontan	29	17.9	41.7	64.6
South Lahontan	20	27.4	51.1	74.2
Colorado River Desert	22	50.4	70.8	91.2
Statewide Weighted Average	398	33.3	53.6	77.1

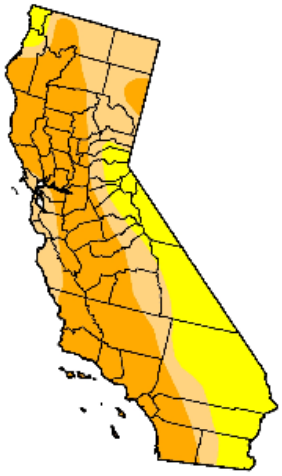
U.S. Drought Monitor

September 29, 2009
Valid 7 a.m. EST

California

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.0	100.0	73.4	45.8	0.0	0.0
Last Week (09/22/2009 map)	0.0	100.0	73.4	45.8	0.0	0.0
3 Months Ago (07/07/2009 map)	2.5	97.5	72.8	44.3	0.0	0.0
Start of Calendar Year (01/06/2009 map)	1.7	98.3	88.2	41.3	2.8	0.0
Start of Water Year (10/07/2008 map)	0.0	100.0	95.9	55.0	0.0	0.0
One Year Ago (09/30/2008 map)	0.0	100.0	95.9	55.2	2.1	0.0



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

http://drought.unl.edu/dm

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Author: D. Miskus, JAWF/CPC/NOAA

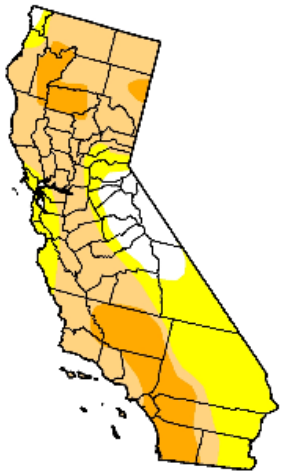
U.S. Drought Monitor

October 27, 2009
Valid 7 a.m. EST

California

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	9.1	90.9	62.5	17.7	0.0	0.0
Last Week (10/20/2009 map)	10.6	89.4	61.2	17.7	0.0	0.0
3 Months Ago (08/04/2009 map)	0.8	99.2	72.8	44.3	0.0	0.0
Start of Calendar Year (01/06/2009 map)	1.7	98.3	88.2	41.3	2.8	0.0
Start of Water Year (10/06/2009 map)	0.0	100.0	73.4	45.8	0.0	0.0
One Year Ago (10/28/2008 map)	0.0	100.0	93.6	55.6	0.0	0.0



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http://drought.unl.edu/dm

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Author: M. Rosencrans, CPC/NOAA